

Compact Dry

An easy test method for counting microorganisms



Ready-to-use and easy handling



Several official validated and special parameters available



Easy to store at room temperature

More information:



<https://r-b.io/CompactDry>

Compact Dry – an easy test method for counting microorganisms

General information

Compact Dry is a **ready-to-use** test method which helps to reduce the time needed to perform microbial testing. Therefore, it allows maximum productivity by increasing efficiency. The plates can be used to test raw materials as well as finished products like food and beverages. In combination with a wet swab sampling system, Compact Dry plates can also be used for surface monitoring especially for areas which are difficult to reach.

Compact Dry is an **easy-to-read** results test method. Place 1 mL of sample (liquid food or homogenized/diluted solid food) onto the plate and wait until the liquid spread over the whole plate by itself. Incubate the plates at the temperature specified in the package inserts. The grown colonies are pigmented with different colors, developed by chromogenic substrates and redox indicators. The type of bacteria is identified by its color. For further investigation single colonies can be easily selected and picked from the plate surface.

Compact Dry is also an **easy-to-store** test method. The plates can be kept at room temperature for up to 24 months. Therefore samples can be applied to the plates directly on-side. The firmly closing lid allows the safe transport of the Compact Dry plates. The plates can be used over an incubation temperature range of 20 - 42 °C. The rigid structure of the Compact Dry plates enables easy, slip-proof stacking in the incubator and prevents leakage of sampling material. This saves space and keeps the incubator neatly.

Additionally membrane filters can be tested using Compact Dry plates. Pipette 1 mL of sterile water (or physiological sodium chloride solution; e.g. RIDA® 0.9 % NaCl, Art. No. Z0301) into the middle of the Compact Dry plate. Filter 100 mL water or any other liquid using an ordinary sterile membrane filter (e.g. Ø 47 mm, 0.45 µm pore size) for microbiological analysis. Place the filter on the moisturized nutrient pad with trap side up. Colonies will grow on the filter.

Membrane filter method: Procedure for Compact Dry

- Select a suitable Compact Dry plate (e.g. EC), remove the plate cap and pipette 1 mL of sterile water (or sodium chloride solution) into the middle of the dry sheet.
- Using sterile tweezers pick up a sterile membrane filter.
- Remove the funnel from a sterilized filtering device and place the sterile membrane filter on the filter grid.
- Set the funnel, pour the sample water into the funnel and filter the sample water under reduced pressure.
- After filtering the sample, wash the inner surface of the funnel with 20 - 30 mL of sterile water and filter it. Repeat the same steps two or three times.
- Detach the funnel and take the membrane filter out with sterilized tweezers. Put the filter on the prepared Compact Dry plate avoiding any bubbles. The trap side has to be up.
- Turn over the capped plate and put in an incubator for incubation under the prescribed condition.

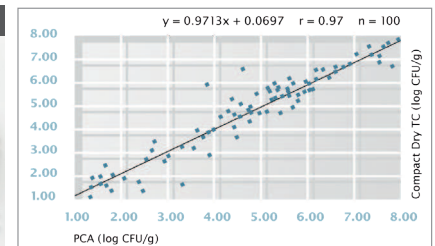
Compact Dry – product line

Compact Dry TC (total count)

Compact Dry TC is a test plate for total viable mesophilic count, which contains a standard nutrient medium. The colonies grown on Compact Dry TC are red due to the redox indicator triphenyl tetrazolium chloride. Therefore they are easily to identify and to differentiate from possible food residues.

The diagram shows the excellent correlation between the Compact Dry TC method and the conventional PCA method (standard plate count agar). The comparison data have been prepared by evaluating 100 different food samples. For the product Compact Dry TC not only the

Total viable count



shown internal study has been finished successfully. The detection system for total count in food samples has already gained various official approvals (see table on last page).

Compact Dry CF for coliforms

For the detection of coliforms Compact Dry CF is an easy tool. Coliforms grow with blue/blue green colonies as the recipe contains the chromogenic enzyme substrate X-GAL. The growth of bacteria others than coliforms is mainly inhibited, but in case of growth they form colorless colonies. Compact Dry CF has gained various approvals (see table on last page).

P. aeruginosa



K. oxytoca

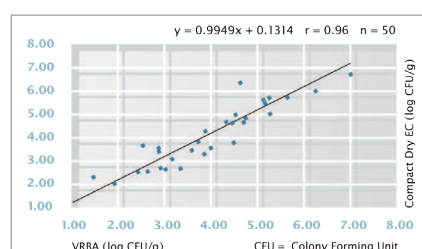
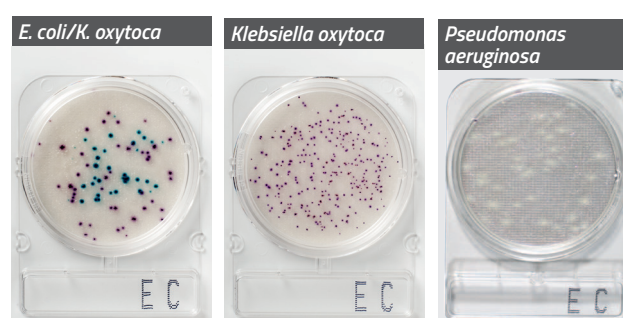


Compact Dry – product line

Compact Dry EC (*E. coli* and coliforms) bacteria form blue and red colonies

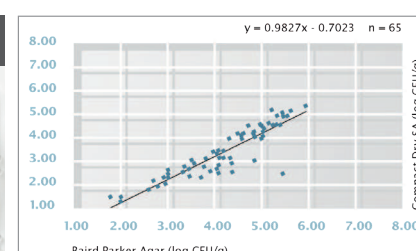
Compact Dry EC is a medium for *E. coli* and coliforms. The medium contains two kinds of chromogenic enzyme substrates: Magenta-Gal and X-Gluc. Due to these substrates *E. coli* forms blue to blue purple colonies while coliforms show a reddish, red violet or pink coloration. The total coliform group count is the sum of all colonies identified as coliforms or *E. coli*.

Regression line data from the Compact Dry EC method for enumeration of coliforms plotted versus the conventional VRBA method (violet red bile agar) show a very good correlation per 50 food samples. Furthermore, Compact Dry EC has gained various official approvals (see table on last page), also.



Compact Dry X-SA for *Staphylococcus aureus*

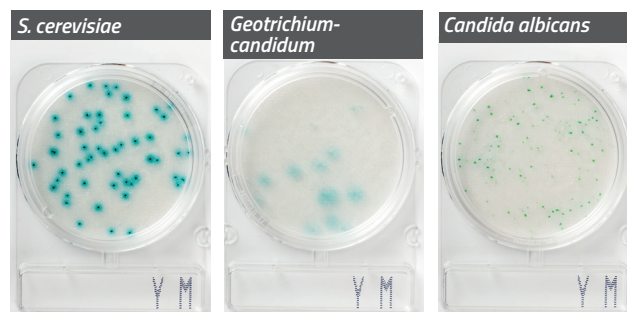
Compact Dry X-SA is a medium used to determine *Staphylococcus aureus* by means of selective growth and differentiation via chromogenic substrates. The medium is based on an improved mannitol-salt agar. During growth *Staphylococcus aureus* converts substrates for acid phosphatase and β -glucosidase into blue colored products. This results in formation of light blue colonies. Compact Dry X-SA has gained various approvals (see table on last page).



Compact Dry – product line

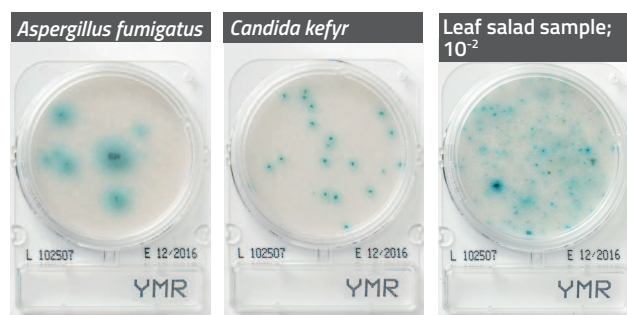
Compact Dry YM for yeast and mold

With Compact Dry YM yeasts and molds can be differentiated by color development. The medium contains the chromogenic enzyme substrate X-Phos which turns blue with most types of yeast. Molds form their characteristic 3-dimensional, “fluffy” colonies in different typical colors. Antibiotics in the medium of Compact Dry YM plates inhibit the growth of bacteria. The plates containing the diluted sample can be evaluated after 3 to 7 days of incubation time. The Compact Dry YM allows a very good 3-dimensional growth of yeast and mold. Compact Dry YM has gained various approvals (see table on last page).



Compact Dry YMR for rapid detection of yeasts and molds

With Compact Dry YMR yeasts and molds can be detected after only 48 to 72 h incubation time. The chromogenic enzyme substrate contained in the nutrient pad turns blue with most types of yeast and molds, whereas molds may change quickly to their own characteristic pigmentation. Molds can easily form 3-dimensional, fluffy colonies between the nutrient pad and the lid of the plate, even in only 72 hours. Antibiotics in the medium of Compact Dry YMR inhibit the growth of bacteria. Compact Dry YMR has gained various approvals (see table on last page).



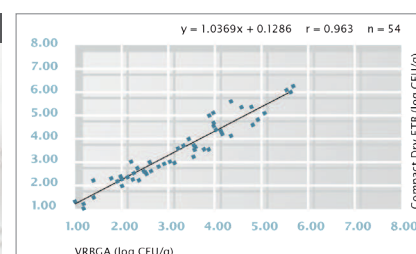
Detection within 48 h!

Compact Dry – product line

Compact Dry ETB for *Enterobacteriaceae*

Compact Dry ETB serves for easy and fast detection of *Enterobacteriaceae*. The medium contains glucose and selective agents for differentiation and enumeration of *Enterobacteriaceae*. Specific colonies will be almost visible in a red color. Due to the crystal violet contained in the nutrient pad of Compact Dry ETB colonies can be colored reddish violet, occasionally. The medium has gained various official approvals (see table on last page).

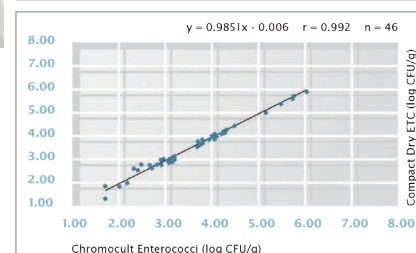
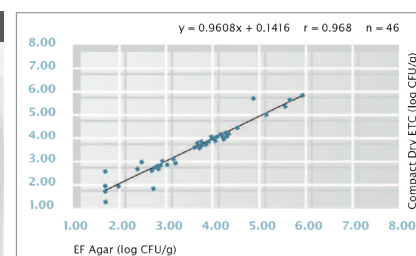
E. cloacae



Compact Dry ETC for an easy detection of *Enterococci* in food and water

Enterococci occur and grow in a variety of fermented foods. The presence of *Enterococci* in food products has long been considered as an indication of poor sanitary conditions during production and processing. On the other hand, *Enterococci* are specifically used for the fermentation of a variety of foods. It is claimed that *Enterococci* play an important role in the development of the organoleptic properties of the fermented foods. For water, the presence of *Enterococci* serves as an indicator of fecal contamination. *Enterococci* in water can only come from human or animal feces. The Compact Dry ETC is based on the usage of X-glucoside (X-Gluc.) and antibiotics as selective agents. *Enterococci* will grow with blue to blue green colonies after incubation for 24 hours at 37 °C.

E. faecalis



Compact Dry ETC is official approved by different validation authorities (see table on last page).

Compact Dry – product line

Compact Dry SL for *Salmonella*

With Compact Dry SL an easy and reliable detection of *Salmonella* is possible using the regular pre-enrichment procedures for food samples according to ISO 6579:2007. The principle of *Salmonella* detection on Compact Dry SL is fielded into three different criteria which can be observed on the detection plate:

1. Color change of the medium from blue-purple to yellow. The color change is due to an alkalization reaction caused by the *Salmonella* specific enzyme lysine decarboxylase.
2. The occurrence of green to black colonies caused by decomposition of a chromogenic substrate (green-blue) as well as the ability of *Salmonella* to produce hydrogen sulfide

Compact Dry SL – not inoculated



Salmonella Dublin



Salmonella Infantis



(colonies will be colored black if iron ions are present).

3. The motility of *Salmonella* proven by migration of colonies from the point of inoculation of sample to other areas of the detection plate.

Compact Dry LM for determination and enumeration of *Listeria monocytogenes* in food

Listeria monocytogenes is an important pathogen, which could cause serious diseases. Compact Dry LM is a ready-to-use, chromogenic plate for enumeration and detection of *Listeria monocytogenes* in food. Detection of *Listeria monocytogenes* is enabled through the combination of selective agents and chromogenic substrates. *Listeria monocytogenes* form red colonies with a blue halo on Compact Dry LM. Compact Dry LM has been tested and validated by a validation authority (see table on last page).

Listeria monocytogenes



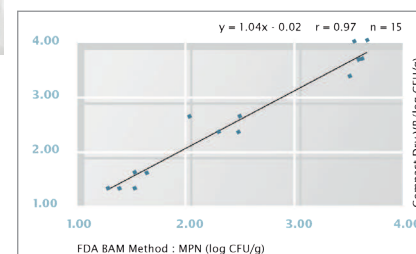
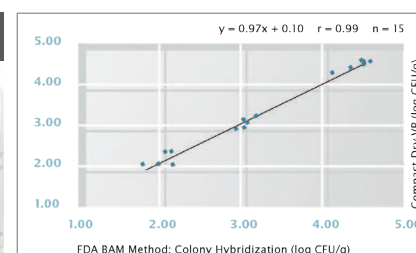
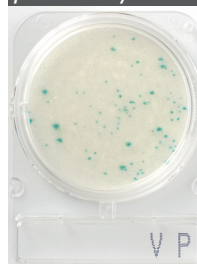
Compact Dry – product line

Compact Dry VP for *Vibrio parahaemolyticus* and *Vibrio* spp.

Vibrio parahaemolyticus is a bacterium that can cause cholera. *Vibrio parahaemolyticus*-associated gastroenteritis is the infection caused by this organism. *Vibrio parahaemolyticus* naturally inhabits coastal waters and is present in higher concentrations during the summer; it is a halophilic or salt-requiring organism. *Vibrio parahaemolyticus* is found in marine environments, sea foods, and the feces of patients with acute enteritis.

Compact Dry VP can not only easily detect *Vibrio parahaemolyticus*, but also differentiate *Vibrio parahaemolyticus* from other vibrios. The product contains a specific chromogenic substrate for *Vibrio parahaemolyticus* which develops blue/green or blue colonies, whereas other vibrios develop white colonies.

Vibrio parahaemolyticus



Compact Dry PA for *Pseudomonas aeruginosa*

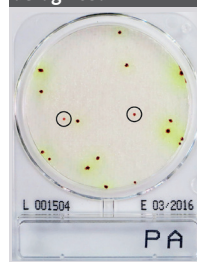
Pseudomonas aeruginosa is an opportunistic pathogenic bacterium of both humans and plants and can cause a variety of diseases especially in people with weakened immune systems.

P. aeruginosa and other members of the genus (e.g. *P. putida*) are also known to occur as a cause of spoilage in food products.

On Compact Dry PA growing pseudomonads colonies will develop a red coloration which is due to the integrated redox indicator die Tetrazolium salt. The differentiation of *P. aeruginosa* to other pseudomonads is the formation of a greenish-yellow halo surrounding the colony (see image).

Some other bacterial genera or *Pseudomonas* species are able to grow in some cases, but will

Pseudomonas aeruginosa



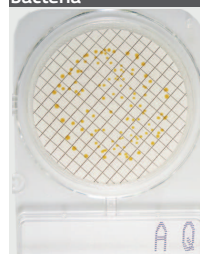
form colorless or red colonies without the greenish-yellow halo (colonies marked with black circles in the image). Around 20 % of the *P. aeruginosa* strains will occur without halo, also. Compact Dry PA has been tested and validated by a validation authority (see table on last page).

Compact Dry – product line

Compact Dry AQ for detection of heterotrophic water bacteria

Most of the common standard methods for total count of heterotrophic water bacteria recommend to use nutrient rich media as well as incubation temperatures at 36 ± 1 °C. Due to these conditions for growth versus the condition requirement of water bacteria it might be possible that only a part of the actual microbial load in the sample will be detected. Compact Dry AQ is a medium that also contains a full composition of nutrients on one side, but with significantly lower nutrient concentration as common PC media. Withal there is a longer incubation period at lower temperatures necessary for Compact Dry AQ. These conditions will lead to a better

Heterotrophic water bacteria



representation of slowly growing bacteria or those which are adapted to rather low temperatures besides fast-growing organisms which prefer high nutrient concentrations.

Compact Dry LS for the detection of *Listeria* spp.

Listeria can be found in all areas of the biotic environment. These organisms are known as so called „dirt germs“. From about 10 already known species there is only one pathogenic organism *Listeria monocytogenes* described as cause of food poisoning. Infections may cause sepsis, meningitis or encephalitis and be fatal very often. Infections of pregnant women will have unexceptional dramatic consequences for the fetal development.

The risk potential of contaminations with *L. monocytogenes* can be estimated very well via the quantitative determination of the total amount of *Listeria* in the samples. Consequentially counter

Listeria spp.



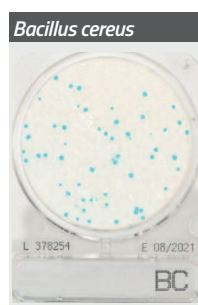
measures during food production can be taken early without direct detection of the pathogen. Compact Dry LS contains a standard nutrient medium for detection of *Listeria* spp. The implemented chromogenic substances lead to a blue coloration of colonies on Compact Dry LS.

Compact Dry – product line

Compact Dry BC for the detection of *Bacillus cereus*

The Gram-positive bacterium *Bacillus cereus* is able to produce survivable spores and is wide spread in soil and waters. Therefore, it is quite obvious that this organism can enter the production chain of foods relatively easy. *B. cereus* is not only able to spoil foods; moreover it possesses toxic characteristics because of its toxin that can cause vomit and diarrhea. The routinely control of foods for contaminations with *B. cereus* is therefore recommended.

Compact Dry BC plates have to be incubated at 30 °C for 24 hours. The chromogenic substances in the medium are used by *B. cereus* to form green-blue colonies. The Compact Dry BC nutrient pad is approved according to ISO 16140 and by an other validation authority (see table on last page).



Features and benefits of the Compact Dry plates

Compact Dry combines the features and benefits of the traditional plate media with the modern features of dehydrated film media.

This unique combination will shorten your test time and increase your lab efficiency, thus reducing your total costs.

Steps	Criteria	Homemade plates	Prepared plates	Other dehydrated plates	Compact Dry
Preparation and storage	Ready to use		•	•	•
	Long shelf life at RT				•
	Small size (for storage and disposal)			•	•
Inoculation (simple and fast)	Liquid samples			•	•
	Surfaces			•	•
Incubation	Small size			•	•
	Tidely closing system				•
	No contact to incubator surfaces				•
Reading and interpretation	Easy counting (chromogenic)		•	•	•
	Easy picking and cloning	•	•		•
Validation	Standardization of the production		•	•	•
	Validation/approvals	•	•	•	•

Product overview

Product	Art. No.	Packaging	Application	Incubation time	Incubation temperature
Compact Dry AQ	HS9541	100 plates	Heterotrophic water bacteria	48 ± 2 hours*	35 ± 1 °C*
	HS9542	40 plates			
Compact Dry BC	HS9721	100 plates	<i>Bacillus cereus</i>	24 ± 2 hours plus a further 24 ± 2 hours	30 ± 1 °C
	HS9722	40 plates			
Compact Dry CF	HS8791	100 plates	Coliforms	24 ± 2 hours	35 ± 2 °C; 40 - 42 °C for fecal coliforms
	HS8792	40 plates			
Compact Dry EC	HS8781	100 plates	<i>E. coli</i> and coliforms	24 ± 2 hours	35 ± 2 °C
	HS8782	40 plates			
Compact Dry ETB	HS9431	100 plates	<i>Enterobacteriaceae</i>	24 ± 2 hours	37 ± 1 °C
	HS9432	40 plates			
Compact Dry ETC	HS9461	100 plates	<i>Enterococci</i>	20 - 24 hours	37 ± 1 °C
	HS9462	40 plates			
Compact Dry LM	HS9901	100 plates	<i>Listeria monocytogenes</i>	24 hours (+ 24 hours)	37 ± 1 °C
	HS9902	40 plates			
Compact Dry LS	HS8811	100 plates	<i>Listeria</i> spp.	24 ± 2 hours plus a further 24 ± 2 hours	35 - 37 °C
	HS8812	40 plates			
Compact Dry PA	HS9491	100 plates	<i>Pseudomonas aeruginosa</i>	45 - 51 hours	34 - 36 °C
	HS9492	40 plates			
Compact Dry SL	HS9401	100 plates	<i>Salmonella</i>	20 - 24 hours	41 - 43 °C
	HS9402	40 plates			
Compact Dry TC	HS8771	100 plates	Total count	48 ± 3 hours**	35 ± 2 °C** (20 - 42 °C)
	HS8772	40 plates			
Compact Dry VP	HS8821	100 plates	<i>Vibrio parahaemolyticus</i>	20 - 24 hours	35 - 37 °C
	HS8822	40 plates			
Compact Dry X-SA	HS9621	100 plates	<i>Staphylococcus aureus</i>	24 ± 2 hours	35 - 37 °C
	HS9622	40 plates			
Compact Dry YM	HS8801	100 plates	Yeasts and molds	3 - 7 days	25 - 30 °C
	HS8802	40 plates			
Compact Dry YMR	HS9801	100 plates	Yeasts and molds	48 - 72 hours	25 - 30 °C
	HS9802	40 plates			

* See instructions for use for special incubation conditions according to ISO 6222

** Please use the incubation temperature/time according to the legal specification of each country's food regulations

Approvals

Product name	Validation (No.)		
	MicroVal	NordVal	AOAC-RI
Compact Dry AQ	---	---	---
Compact Dry BC	2019LR87	---	---
Compact Dry CF	2008LR03	035	110401
Compact Dry EC	2008LR04 + 2008LR05	036	110402
Compact Dry ETB	2008LR02	034	012001
Compact Dry ETC	2014LR48	047	111902
Compact Dry LM	2020LR91a + 2020LR91b	---	---
Compact Dry LS	---	---	---
Compact Dry PA	2017LR66	---	---
Compact Dry SL	---	---	---
Compact Dry TC	2007LR01	033	010401
Compact Dry VP	---	---	---
Compact Dry X-SA	2008LR14	042	081001
Compact Dry YM	RQA2008LR10	043	100401
Compact Dry YMR	2016LR61	050	092002

MicroVal and NordVal approvals are according to the international standard “Microbiology of food and animal feed – Method validation”; EN ISO 16140.

Compact Dry TC also is approved by:

- Servico Publico Federal; Minsterio da agricultura, pecuaria e ae Astecimento;
Brazil No. AUP/CGI/DIPOA No. 0453/2006
- Microbiological Methods Committee; Microbiology Evaluation Division;
Bureau of Microbial Hazards, Food Directorate, Health Products and Food Branch, Health Canada;
Ottawa, Ontario K1A 0L2

Compact Dry plates are produced at an ISO 9001 certified production site.

References

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Nissui Pharmaceutical granted PTM status for Compact Dry TC, Inside Laboratory Management; AOAC, July 2004: 19 - 22

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Ellis P and Meldrum RJ (2001) Evaluation of dryfilm methods for aerobic colony counts. Poster presentation at PHLS 26th Scientific Conference, University of Warwick, September 2001

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